July 1, 2004
9704-PFS-017


DOCUMENT CONTROL DESK
UNITED STATES NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555


Reference:    a) Boeing Letter G-1151-RSO-92-365 dated August 31, 1992; R.S. Orr to the NRC Operations Center

                b) NRC Letter Docket No. 99901227 dated August 12, 1992; L. J. Norrholm to R. S. Orr; Subject: Response to 10 CFR 21 Inquiry
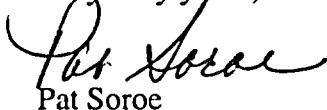

Dear Sir or Madam:

In accordance with the Reference correspondence and 10 CFR 21, Boeing is sending the NRC the attached error notices received from our former software suppliers. Because of unknown current addresses, the following former customers were not notified:

> Reactor Controls, Inc
> Echo Energy Consultants
> Nuclear Applications and Systems Analysis Company (Japan)
> Nuclear Power Services
> GPU Nuclear Corporation
> Tenera, Inc.
> Stone & Webster Engineering
> Raytheor Engineers & Constructors

Error notices have been sent to our other former customers.

Please note that Mark Snyder has taken another position and the undersigned has assumed the role of Nuclear Administrator for Boeing.

Very truly yours,

Pat Soroe
Nuclear Administrator
Mail Code 7A-XT

Enclosures: GT STRUDL Program Report Forms 2004.1 through 2004.9

IE09

# GTSTRUDL Program Report Form

GPRF No.: __2004.1__

DATE: _1/26/04_

FROM:   Computer-Aided Structural Engineering Center
Georgia Institute of Technology
Atlanta, Georgia 30332-0355

SEVERITY LEVEL:

_X_ URGENT    Problem results in incorrect answers which may not be apparent or job aborts and cannot be recovered within the session or job.

_ SERIOUS    Problem results in incorrect answers which are obvious or problem prevents completion of a particular user's task.

_ MINOR    Problem can be worked around or problem poses high frustration factor.

_ INFORMATIVE  Documentation error, program usage tip, user inconveniences.

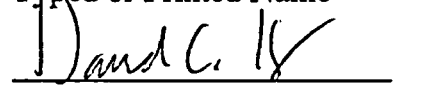Date Problem Confirmed __January 26, 2004__

Date Notification Sent _____1/26/04_____

Computers _All_

Operating System_All_

Version _All_

Target Release for Correction    Version 28.0

_____ _knw_
Signature
R & D Division

_Michael H. Swanger_
Typed or Printed Name

_____
Signature
Professional Services Division

_David C. Key_
Typed or Printed Name

_Sr. RE_
Title

_1/26/04_
Date of Signature

_Configuration Control Manager_
Title

_1/26/04_
Date of Signature

Rev. 2.2

# GTSTRUDL Program Report Form
## (Continued)

DESCRIPTION:

Linear buckling analysis will abort if one or more dynamic loads are among the list of active loads. If dynamic loads are among the defined loading conditions, the work-around is to specify the LOAD LIST command without naming any dynamic loads prior to executing the PERFORM LINEAR BUCKLING ANALYSIS command.

GTSTRUDL User Reference Manual Sections:

The PERFORM LINEAR
BUCKLING ANALYSIS Command                Section 2.8, Volume 3, Rev. R,
                                         GTSTRUDL Reference Manual

# GTSTRUDL Program Report Form

FROM: Computer-Aided Structural Engineering Center
Georgia Institute of Technology
Atlanta, Georgia 30332-0355

SEVERITY LEVEL:

X_ URGENT          Problem results in incorrect answers which may not be apparent or job aborts
                   and cannot be recovered within the session or job.

_ SERIOUS          Problem results in incorrect answers which are obvious or problem prevents
                   completion of a particular user's task.

_ MINOR            Problem can be worked around or problem poses high frustration factor.

_ INFORMATIVE      Documentation error, program usage tip, user inconveniences.

Date Problem Confirmed ___2/2/04_____

Date Notification Sent ___2/2/04_____

Computers ___All_____

Operating System ___All_____

Version ___All versions prior to Version 28.0 (versions released prior to 2004)___


Signature
R & D Division

Kenneth M. Will
Typed or Printed Name

2/2/04
Date of Signature

Title

Configuration Control Manager
Title

Signature
Professional Services Division

David C. Key
Typed or Printed Name

2/2/04
Date of Signature

# GTSTRUDL Program Report Form
### (Continued)

GPRF No.: _2004.2_

DATE: _2/2/04_

DESCRIPTION:

When the following is done in the Scope Environment, an incorrect display of contouring results (stresses, resultants, etc) may be produced:
    (1) A window on a 3-D structure is created.
    (2) The window is rotated (not a planar view)
    (3) A contour (stress, resultants, etc) for the window is displayed.

Workaround:

If all of the elements are in a common plane, display a plan view of the window. You can also use the CONTOUR command with plane specs to create a window of a plane in the model.
In addition, you can use GTMenu to create a view of a plane of the model and then display the contours.

Applicable Section of the Documentation:

Please note that the Scope Environment was removed from the documentation with the release of Version 26 and Revision R of the GTSTRUDL Reference Manuals as the Scope Environment is no longer under development.
In previous revisions of the Reference Manual, the Contour command for the Scope Environment was found in Section 2.7.6.14.4 of Volume 3.

# GTSTRUDL Program Report Form

GPRF No.: ___2004.3___

DATE: _2/4/04_

FROM:  Computer-Aided Structural Engineering Center
Georgia Institute of Technology
Atlanta, Georgia 30332-0355

SEVERITY LEVEL:

_X_ URGENT  Problem results in incorrect answers which may not be apparent or job aborts and cannot be recovered within the session or job.

_ SERIOUS  Problem results in incorrect answers which are obvious or problem prevents completion of a particular user's task.

_ MINOR  Problem can be worked around or problem poses high frustration factor.

_ INFORMATIVE  Documentation error, program usage tip, user inconveniences.
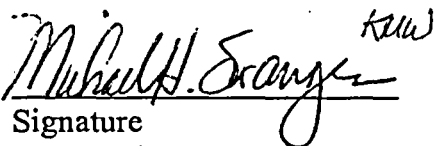
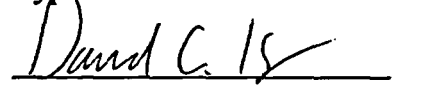Date Problem Confirmed ___February 3, 2004_____

Date Notification Sent ___2/4/04_____

Computers _All_____

Operating System_All_____

Version _All_____

Target Release for Correction  Version 28.0

_Michael H. Swanger_ (signature) _kmw_

Signature
R & D Division

___Sr. RE___
Title

_Michael H. Swanger_
Typed or Printed Name

_David C. Key_ (signature)

Signature
Professional Services Division

_2/3/04_
Date of Signature

_Configuration Control Manager_
Title

_David C. Key_
Typed or Printed Name

_2/4/04_
Date of Signature

Rev. 2.5

# GTSTRUDL Program Report Form
(Continued)

DESCRIPTION:

The NONLINEAR ANALYSIS command may abort when nonlinear spring elements are present in the model and all joints are fully fixed supports. The work-around is to make certain the model is correct.

GTSTRUDL User Reference Manual Sections:

| | |
|---|---|
| Nonlinear Spring Element | Section 2.5.3, Volume 3, Rev. R, GTSTRUDL Reference Manual |
| NONLINEAR ANALYSIS Command | Section 2.5.5, Volume 3, Rev. R, GTSTRUDL Reference Manual |

# GTSTRUDL Program Report Form

GPRF No.: ___2004.4___

DATE: _2/19/04_

FROM:     Computer-Aided Structural Engineering Center
          Georgia Institute of Technology
          Atlanta, Georgia 30332-0355

SEVERITY LEVEL:

___ URGENT        Problem results in incorrect answers which may not be apparent or job
                  aborts and cannot be recovered within the session or job.

_X_ SERIOUS       Problem results in incorrect answers which are obvious or problem
                  prevents completion of a particular user's task.

___ MINOR         Problem can be worked around or problem poses high frustration factor.

___ INFORMATIVE   Documentation error, program usage tip, user inconveniences.
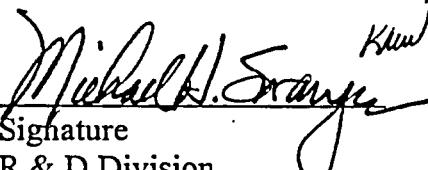
Date Problem Confirmed __February 18, 2004__

Date Notification Sent ___2/19/04___

Computers _All_

Operating System _All_

Version _All_

Target Release for Correction    Version 28.0

_Michael H. Swanger_    Klw
Signature
R & D Division

                                        _Sr. RE_
                                        Title

_Michael H. Swanger_
Typed or Printed Name

_David C. Key_
Signature
Professional Services Division

                                        _2/18/04_
                                        Date of Signature

                                        _Configuration Control Manager_
                                        Title

_David C. Key_
Typed or Printed Name

                                        _2/19/04_
                                        Date of Signature

Rev. 2.5

## DESCRIPTION:

When rigid bodies are DELETED, i.e. specified in DELETIONS mode, any slave joints of the deleted rigid bodies having only one incident member or element will be incorrectly marked INACTIVE. Any subsequent analysis (stiffness, dynamic, etc.) will then terminate with one or more error messages indicating that there is an active member or element incident on the subject inactive joints. Consider the following example:

```
{   39} > TYPE RIGID PLANE
{   40} > RIGID BODY INCIDENCES
{   41} >   'RP1' 'M1' 5 TO 8      $ JOINT M1 IS THE MASTER JOINT;  JOINTS 5 TO 8
{   42} >                          $ ARE THE SLAVE JOINTS
{   43} >   'RP2' 'M2' 9 TO 12     $ JOINT M2 IS THE MASTER JOINT;  JOINTS 9 TO 12
{   44} >                          $ ARE THE SLAVE JOINTS
        .
        .
        .
{   69} > DELETIONS
{   70} > RIGID BODIES 'RP2'

 **** INFO_STMJDL -- THE FOLLOWING JOINTS  WERE MADE INACTIVE WHEN THE ABOVE MEMBERS WERE DELETED
                         M2        9        10        11        12
{   71} > ADDITIONS
```

Rigid body RP2 is defined by master joint M2 and slave joints 9 through 12 (lines 39 to 44), then subsequently deleted (lines 69 and 70). The printed message – **** INFO_STJMDL... – indicates that the master joint M2 and the slave joints 9, 10, 11, and 12 were marked inactive. The inactive status for joint M2 is valid because indeed, no other members are attached to this joint. However, slave joints 9 through 12 were erroneously marked inactive because only one non-rigid body member is incident on these joints (had there been two or more members attached to these joints, the joints would not have been marked inactive). A subsequent attempt to execute a STIFFNESS analysis produced the following error messages:

```
{   74} > STIFFNESS

 **** INFO_STCHCK -- THE FOLLOWING MASTER NODES HAVE INCIDENT RIGID PLANE,
                     PLATE, OR PIN ELEMENTS ONLY AND HAVE BEEN CHANGED TO
                     PLANAR STATUS:

                     M1
 **** ERROR_STCHCK -- MEMBER 5        IS INCIDENT ON INACTIVE JOINT 9       MEMBER IGNORED IN THIS
ANALYSIS
 **** ERROR_STCHCK -- MEMBER 6        IS INCIDENT ON INACTIVE JOINT 10      MEMBER IGNORED IN THIS
ANALYSIS
 **** ERROR_STCHCK -- MEMBER 7        IS INCIDENT ON INACTIVE JOINT 11      MEMBER IGNORED IN THIS
ANALYSIS
 **** ERROR_STCHCK -- MEMBER 8        IS INCIDENT ON INACTIVE JOINT 12      MEMBER IGNORED IN THIS
```

ANALYSIS
**** WARN_STDSY1 -- SCAN mode is ON.  Analysis will be halted.

Slave joints 9 through 12 should not have been marked inactive because at least one active member was attached to each joint.

One possible work-around is to re-activate the erroneously inactivated joints and delete and re-define the members that are indicated to be incident on the inactive joints:

```
ACTIVE JOINTS 9 TO 12
DELETIONS
        MEMBERS 5 TO 8
ADDITIONS
TYPE SPACE FRAME
MEMBER INCIDENCES
     5      5      9
     6      6     10
     7      7     11
     8      8     12
```

GTSTRUDL User Reference Manual Sections:

Joint Constraints – Rigid Bodies and
Joint Ties                                    Section 2.6.5, Volume 3, Rev. R,
                                              GTSTRUDL Reference Manual

# GTSTRUDL Program Report Form

GPRF No.: __2004.5__

DATE: 3/4/04

FROM: Computer-Aided Structural Engineering Center
Georgia Institute of Technology
Atlanta, Georgia 30332-0355

SEVERITY LEVEL:

_ URGENT       Problem results in incorrect answers which may not be apparent or job
               aborts and cannot be recovered within the session or job.

X SERIOUS      Problem results in incorrect answers which are obvious or problem
               prevents completion of a particular user's task.

_ MINOR        Problem can be worked around or problem poses high frustration factor.

_ INFORMATIVE  Documentation error, program usage tip, user inconveniences.
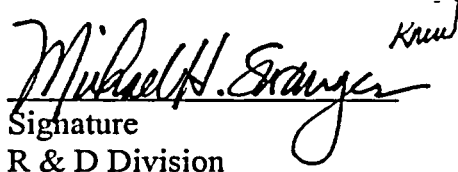
Date Problem Confirmed __March 3, 2004__

Date Notification Sent __3/4/04__
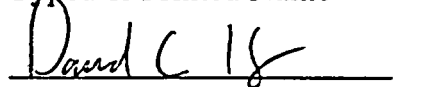
Computers __All__

Operating System __All__

Version __All__

Target Release for Correction   Version 28.0

_Michael H. Swanger_  Knud
Signature
R & D Division

Sr. RE
Title

__Michael H. Swanger__
Typed or Printed Name

__3/3/04__
Date of Signature

__David C. Key__
Signature
Professional Services Division

__Configuration Control Manager__
Title

__David C. Key__
Typed or Printed Name

__3/4/04__
Date of Signature

Rev. 2.5

# GTSTRUDL Program Report Form
## (Continued)

GPRF No.: __2004.5__

DATE: _3/4/04_

## DESCRIPTION:

Static analysis will abort if member and/or element loads are applied to rigid bodies. The work-around is to remove any rigid body names from member and element lists in member and element load commands.

## GTSTRUDL User Reference Manual Sections:

Joint Constraints – Rigid Bodies and
Joint Ties                                    Section   2.6.5,   Volume   3,   Rev. R,
                                              GTSTRUDL Reference Manual

# GTSTRUDL Program Report Form

GPRF No.: __2004.6__

DATE: __3/22/04__

FROM:     Computer-Aided Structural Engineering Center
               Georgia Institute of Technology
               Atlanta, Georgia 30332-0355

## SEVERITY LEVEL:

__ URGENT        Problem results in incorrect answers which may not be apparent or job aborts and cannot be recovered within the session or job.

_X_ SERIOUS       Problem results in incorrect answers which are obvious or problem prevents completion of a particular user's task.

__ MINOR          Problem can be worked around or problem poses high frustration factor.

__ INFORMATIVE   Documentation error, program usage tip, user inconveniences.
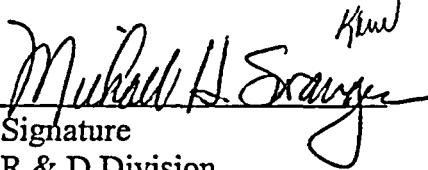
Date Problem Confirmed __March 22, 2004__

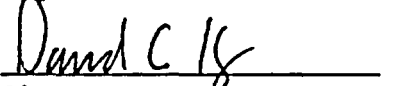Date Notification Sent __3/22/04__

Computers __All__

Operating System __All__

Version __All__

Target Release for Correction    Version 28.0

_Michael H. Swanger_ signature
Signature
R & D Division

__Michael H. Swanger__
Typed or Printed Name

_David C. Iley_ signature
Signature
Professional Services Division

__David C. Iley__
Typed or Printed Name

__Sr. RE__
Title

__3/22/04__
Date of Signature

__Configuration Control Manager__
Title

__3/22/04__
Date of Signature

Rev. 2.5

# GTSTRUDL Program Report Form
## (Continued)

DESCRIPTION:

Nonlinear static analysis computes incorrect reactions under the following conditions:

1. The support is released and all released degrees of freedom are fully released. Elastic supports do not satisfy this condition.

2. A joint load is applied in one or more of the fully fixed degrees of freedom. Joint loads are applied by the JOINT LOAD command and the JOINTS option of the DEAD LOAD and SELF WEIGH commands. Note that the JOINTS option of the DEAD LOAD and SELF WEIGHT commands apply the joint loads automatically, which may not make this condition readily noticable.

The reaction components corresponding to the fully fixed degrees of freedom under these conditions do not include the addition of the applied joint load components. Other reaction components are correct.

GTSTRUDL User Reference Manual Sections:

NONLINEAR ANALYSIS Command     Section 2.5.5, Volume 3, Rev. R, GTSTRUDL Reference Manual

Rev. 2.5

# GTSTRUDL Program Report Form

SEVERITY LEVEL:

_ URGENT          Problem results in incorrect answers which may not be apparent
                  or job aborts and cannot be recovered within the session or job.

_ SERIOUS         Problem results in incorrect answers which are obvious or
                  problem prevents completion of a particular user's task.

_ MINOR           Problem can be worked around or problem poses high frustration
                  factor.

_X_ INFORMATIVE   Documentation error, program usage tip, user inconveniences.

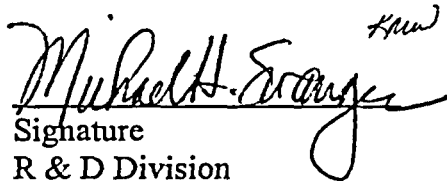Date Problem Confirmed __March 22, 2004_____

Date Notification Sent __3/22/04_____

Computers _All_____

Operating System_ All_____

Version __All_____

Target Release for Correction    Version 28.0

_Michael H. Swanger_        kew

Signature
R & D Division

__Sr. RE__
Title

__Michael H. Swanger__
Typed or Printed Name

__David C. Key__
Signature
Professional Services Division

__David C. Key__
Typed or Printed Name

__3/22/04__
Date of Signature

__Configuration Control Manager__
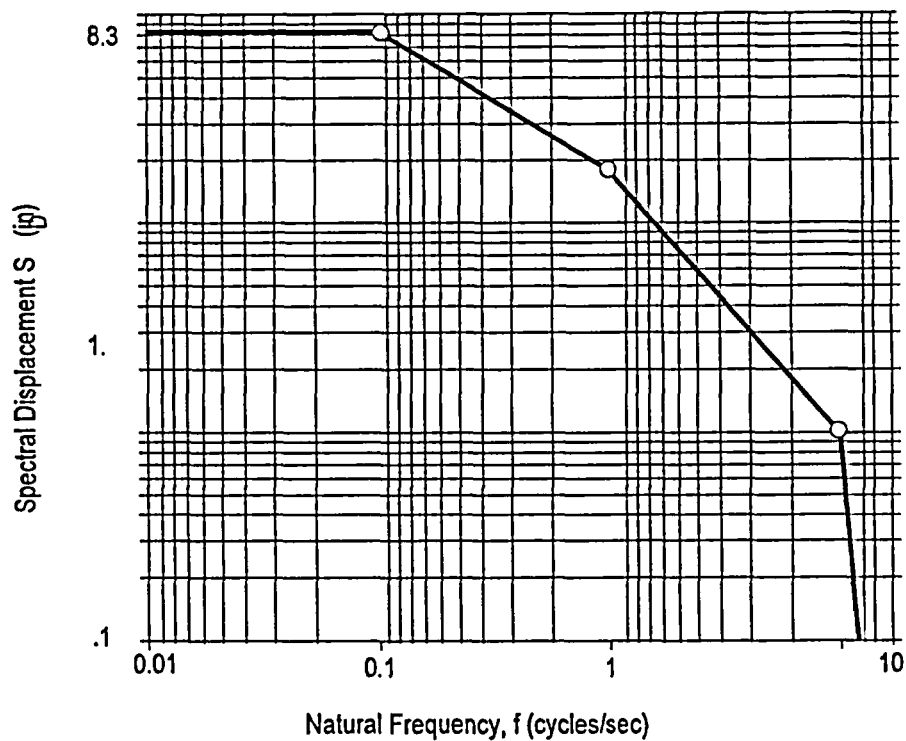Title

__3/22/04__
Date of Signature

Rev. 2.5

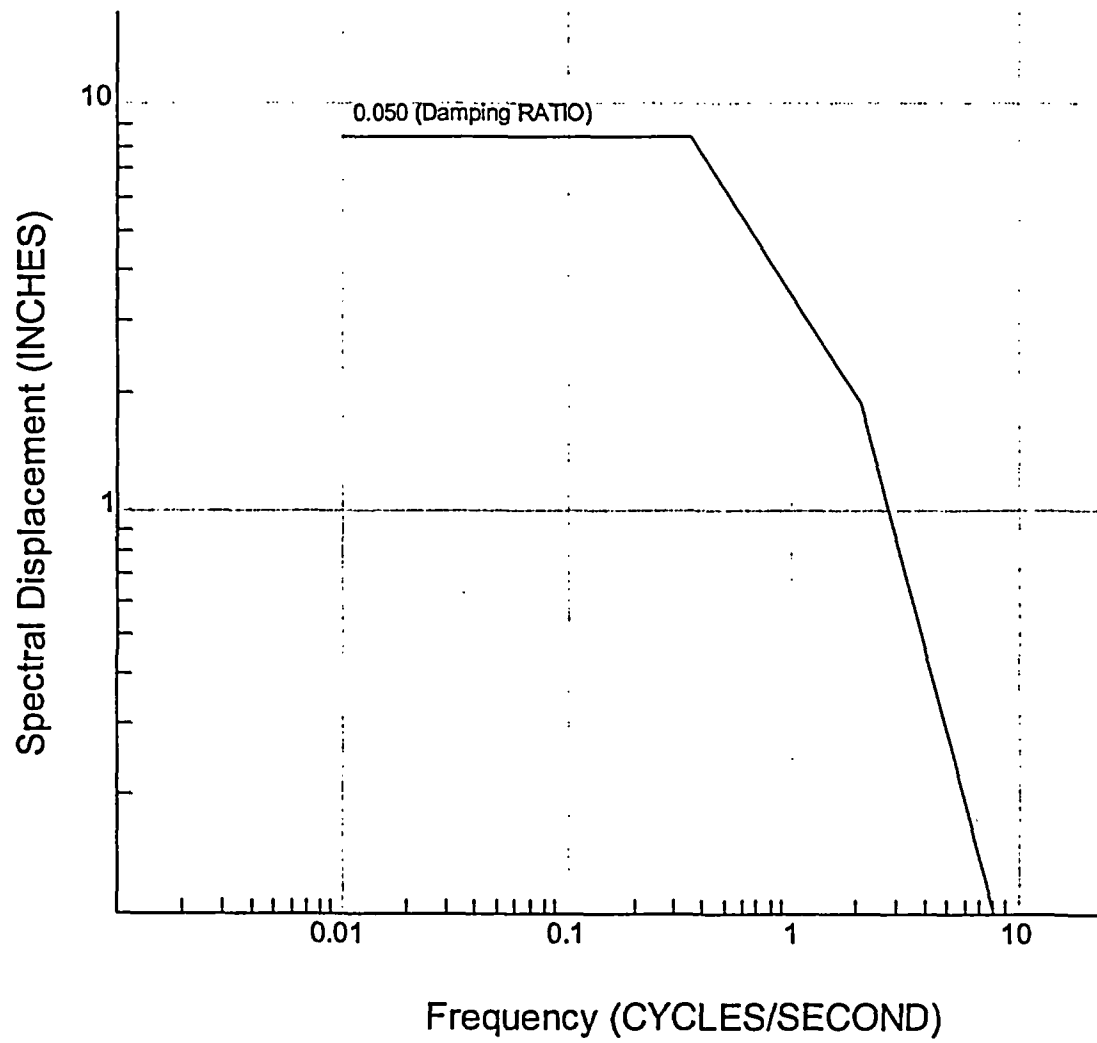GPRF No.: ___2004.7___

DATE: ___3/22/04___

DESCRIPTION:

Figure 3.14-3, Section 3.14, GTSTRUDL Verification Manual, Volume 1, depicting an X-Y plot of response spectrum file EQUAKE, is incorrect. The incorrect figure is shown below, followed by a correct figure:



Incorrect Figure 3.14-3

# Plot of Response Spectrum File 'EQUAKE'



Correct Figure 3.14-3

# GTSTRUDL Program Report Form

GPRF No.: __2004.8__

DATE: 4/9/04

FROM:    Computer-Aided Structural Engineering Center
         Georgia Institute of Technology
         Atlanta, Georgia 30332-0355

SEVERITY LEVEL:

X URGENT              Problem results in incorrect answers which may not be apparent
                      or job aborts and cannot be recovered within the session or job.

_ SERIOUS             Problem results in incorrect answers which are obvious or
                      problem prevents completion of a particular user's task.

_ MINOR               Problem can be worked around or problem poses high frustration
                      factor.

_ INFORMATIVE         Documentation error, program usage tip, user inconveniences.
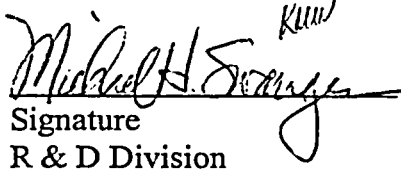
Date Problem Confirmed __April 6, 2004__

Date Notification Sent __4/9/04__

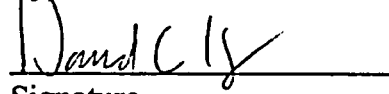Computers __All__

Operating System __All__

Version __All__

Target Release for Correction   Version 28.0

__Michael H. Swanger__ (signature)                    __Sr. RE__
Signature                                             Title
R & D Division

__Michael H. Swanger__                                __4/6/04__
Typed or Printed Name                                 Date of Signature

__David C. Roy__ (signature)                          __Configuration Control Manager__
Signature                                             Title
Professional Services Division

__David C. Roy__                                      __4/9/04__
Typed or Printed Name                                 Date of Signature

Rev. 2.5

# GTSTRUDL Program Report Form
(Continued)

DESCRIPTION:

GTSTRUDL analyses (stiffness analysis, dynamic analysis, etc.) will abort or indicate the presence of instabilities if the model contains a slave joint that is constrained by two or more different master joints. The abort is a floating point exception that produces no error message. Although Section 2.6.5.2.2, Volume 3 of the GTSTRUDL Reference Manual states that this condition shall not be modeled, no program consistency check is made to detect this condition and the abort/instabilites will occur. The work-around is to correct the model so that all slave joints have one and only one master joint.

GTSTRUDL Reference Manual Sections

RIGID BODY INCIDENCES Command        Section 2.6.5.2.2, Volume 3

# GTSTRUDL Program Report Form

GPRF No.: __2004.9__

DATE: _5/7/04_

FROM:      Computer-Aided Structural Engineering Center
Georgia Institute of Technology
Atlanta, Georgia 30332-0355

SEVERITY LEVEL:

__X__ URGENT           Problem results in incorrect answers which may not be apparent or job aborts and cannot be recovered within the session or job.

__ SERIOUS           Problem results in incorrect answers which are obvious or problem prevents completion of a particular user's task.

__ MINOR             Problem can be worked around or problem poses high frustration factor.

__ INFORMATIVE     Documentation error, program usage tip, user inconveniences.
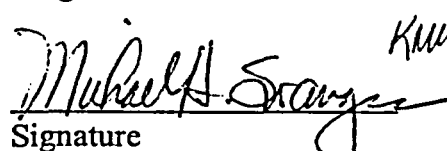
Date Problem Confirmed __April 30, 2004__

Date Notification Sent __5/7/04__
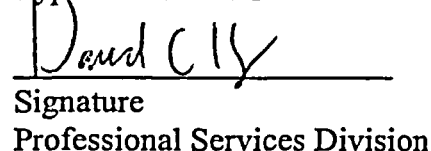
Computers __All__

Operating System __All__

Version __All__

Target Release for Correction    Version 28.0

_Signature_
R & D Division

__Sr. RE__
Title

__Michael H. Swanger__
Typed or Printed Name

__4/30/04__
Date of Signature

_Signature_
Professional Services Division

__Configuration Control Manager__
Title

__David C. Key__
Typed or Printed Name

__5/7/04__
Date of Signature

Rev. 2.5

# GTSTRUDL Program Report Form
## (Continued)

DESCRIPTION:

The PILE ANALYSIS USING SUPERELEMENT command of the Offshore Analysis Module may abort. There is no known work-around.

GTSTRUDL Reference Manual Sections

PILE ANALYSIS USING
SUPERELEMENT Command                    Section 6.4, Volume 8